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Trends in Website Design

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THCI

Original Research

Trends in Website Design

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Abstract

We suggest that diversity and changes in the visual design of web pages exhibit trend-like characteristics. We begin with a survey of the fashion and trends literature to clarify these terms and to relate them to the domain of web design. Based on freely available online archival data we assembled a website design trend library that includes 42 trends encompassing the period from the mid-1990s to the year 2010. The trends were classified into three general groups, from oldest to most recent: Faded, Past-Peak, and Current. A second study tested hypotheses that stemmed from the premise that web design trends exist. Data from 262 designers and non-designers indicate that designers are more accurate than non-designers in evaluating the up-to-dateness of web design trends, and that people tend to like trends that they perceive as up-to-date. We discuss research and practical implications of these findings for the design process of websites and for interactive systems in general, for the role of designers in this process, and for the education of IS students.

Keywords: Trends, web-site design, designers, fashion, adoption, multi-method, empirical, visual design

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INTRODUCTION

Fashion is central to modern life: it drives the economy, mediates communication, influences aesthetic taste, shapes identities, defines individuals and groups, and often fulfills contrasting human needs and desires. The use of information technology (IT) to create, manipulate and disseminate designs has been a major contributor to fashion's expansion and popularization and to the accelerated pace of its lifecycle (Postrel, 2002; Vejlggaard, 2008). At the same time, many aspects of human-computer interaction (HCI) have been subjected to fashion-like processes (Tractinsky, 2006). In recent years HCI research went through a paradigm shift in which the focus was transferred away from purely cognitive, usability oriented topics towards broader and more diverse perspectives such as user experience (Hassenzahl and Tractinsky, 2006) aesthetics (Tractinsky, 2006), and affect (Sun and Zhang, 2006). Still, studies in the field of HCI have thus far neglected fashion and design trends--two terms that often go hand in hand.

The term "fashion" has such denigrating connotation that its serious study "has had repeatedly to justify itself" (Wilson, 1985, p. 15). Similarly, the study of "trend" in its social (as opposed to statistical) meaning has yet to break from the confines of practitioner-oriented research into the realm of scientific research. Still, the phenomena associated with fashion and trends are too widespread and of too much economic and social consequence to be ignored. Lynch and Strauss (2007) note that although fashion plays a key role in many aspects of life, people still view it "as suspect, insubstantial" (p. 1). However, fashion scholars continue to stress its socio-cultural importance as a social barometer and an art form (Wilson, 1985), a form of communication (Davis, 1992), a representation of the Zeitgeist (Blumer, 1969), and a means for deciphering human life in the twenty-first century (Lynch and Strauss, 2007). Early recognition of these functions as they apply to the design of user experiences was expressed by Buxton (2007) who stated that "style and fashion are really important. This is obvious to people from consumer products or haute couture. But it is not so well appreciated in the high-tech sector" (p.50). Thus, despite the general impediments to studying fashion and trends, which include, for example, fuzzy meanings and definitions of these terms, we believe that such research in the context of HCI appears timely and beneficial.

We propose that fashion and trends have various manifestations in HCI. Within this general proposition we focused our preliminary efforts on the context of web design. To the best of our knowledge, there are no scientific publications in this area. We believe that the ground for such research has been laid in recent years, as user interface technology has reached a maturity level that enables advanced and varied design opportunities with considerable visual flexibility and plasticity. Yet, the visual language of web design is relatively new and is still evolving. Thus, we are at an ideal point in time to start analyzing its grammar and meanings while setting the groundwork for future research. Such research would eventually benefit our understanding of the relationships between IT, individuals and society.

Our main objective is to provide evidence for the premise that there are trends in the visual design of websites. The logic of our research follows Merhout and Lee's (2004) delineation of a positivist approach for archival case studies. The authors suggest that under the hypothetico-deductive logic, it doesn't matter whether data exist in the past (e.g., in archives), the present, or the future (e.g., when designing an experiment with the aim of collecting data in the future). The essence of hypothetico-deductive logic is that the researcher has a major premise (e.g., a theory), a minor premise (e.g., the initial conditions) and a conclusion (e.g., "what should be observed if the theory, as applied to the initial conditions, is true" (p. 4204). In our research, the major premise argues that there are trends in website design. The minor premise, or initial condition, is a large sample of website designs from the last 15 years. The conclusion consists of several testable predictions based on the major and the minor premises. These predictions pertain to past, present and future data. Thus, we argue that given the major and the minor premises, some website designs will be very similar to each other but very distinct from other designs; that website designs will differ in terms of how current (up-to-date) they are; and that designers are more likely to exhibit trendsetting tendencies in the area of visual web page design, and thus to recognize the currency of website designs better than non-designers, who are more likely to be followers in that area.¹ Our study compiled empirical evidence to support these predictions.

The rest of the paper is structured as follows: We start with a review of two key concepts—fashion and trend—and the relationships between them, and of relevant adoption theories, followed by a description of the research objectives and program. In the next section we describe the development of the web design trend library. Then we present a study that tested hypotheses that were derived from the premise that web design trends exist, and discuss the findings, their implications and future research directions.

BACKGROUND

We begin this section by reviewing and integrating the literature on fashion and trends, and discussing how these concepts relate to each other. We then discuss models of adoption and diffusion, which are the mechanisms behind the emergence and proliferation of fashion waves and trends.

Definitions and Characteristics of Fashion and Trends

Fashion is a centuries-old phenomenon: the word fashion dates back to the 14th century, deriving from the Latin word *facere* (to make). Its most common meaning refers to "a prevailing custom, usage or style" (Merriam-Webster Online, 2010). Originally a term restricted to clothing and bodily adornments, fashion's scope has spread in recent decades to cover almost all aspects of life, including arts, entertainment, medicine, management, politics and even science (Blumer, 1969).

Various definitions for the concept of "fashion" are presented in Table 1. These definitions suggest that fashion includes several key elements, some of which are obvious, given the common use of the term (e.g., modernity, changes in context and time, and affinity to style), while others may be more nuanced. For example, Barnard (2007a) argues that a classless society with no social structure and no possibility or desire for upwards mobility has no need for fashion, and therefore suggests that the existence of fashion in a society is a good test for both its modernity and 'Westernity.' Fashion also serves as a means of communication and contains social and cultural meanings, which define people's social identification group (Davis, 1992; Barnard, 2007b).

Table 1: Fashion Definitions

Source	Definition
Fashion is a branch of aesthetics, of the art of modern society. It is also a mass pastime, a form of group entertainment, of popular culture.	Wilson (1985)
Fashion...refer[s] to some alteration in the code of visual conventions by which we read meanings...into the clothes we and our contemporaries wear.	Davis (1992)
Fashion is one of the ways in which people are constructed as members (and/or non-members) of cultural groups.	Barnard (2007b)
Modern, Western, meaningful and communicative bodily adornments or dress.	Barnard (2007a)
Fashion can be defined as the prevailing style at any given time.	Lynch and Strauss (2007)

Based on the above definitions and acknowledging the multifaceted nature of the term, we refer to fashion as a cultural and social phenomenon that manifests itself in new and popular styles, is changing over time, and serves as a form of communication for ideas and meanings, thus capturing the spirit of the times.

Fashion can be seen as a specific current manifestation of a higher order phenomenon—the trend. In the last third of the 20th century, the term "trend" became commonly used in the fashion industry, focusing on the prediction of fashion changes. Through the fashion industry it filtered into many other domains, referring mainly to design, style and taste (Vejlgaard, 2008). The literature discusses various trend classes (Bell, 2003; Vejlgaard, 2008). These classes can be rendered on a spectrum, comprising two dimensions: lifespan and range of influence, as depicted in Figure 1.

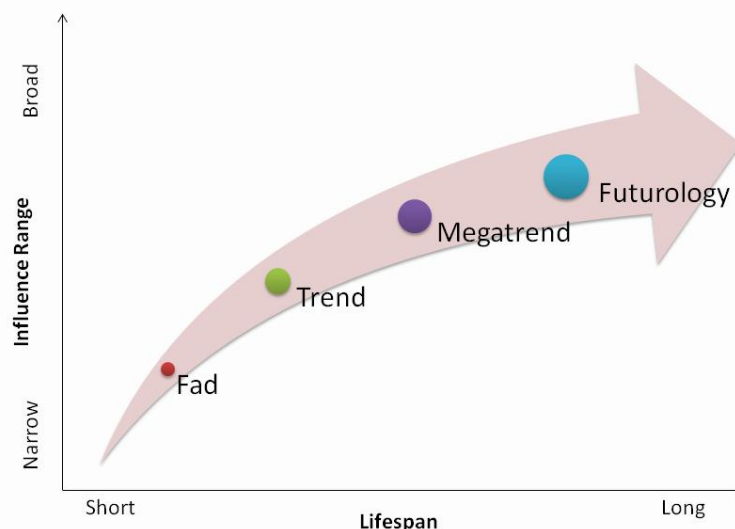


Figure 1: The Trend Spectrum

Three basic trends denote the end points and the center of the spectrum (Vejlgaard, 2008): fad, trend, and megatrend.

- At the transient end of the spectrum is the *fad*, a short term craze for a new or innovative product. It might gain mainstream adoption (e.g., the LIVESTRONG yellow wristband²) but its lifespan is short, often less than a year.
- A *trend* is often social and cultural in nature. It evolves over a longer period of time than a fad and its lifespan is often measured in years, so it is usually detectable only a while after its incubation. Trends signal a direction towards mainstream adoption (e.g., Twitter).
- A *megatrend* is a major political or technological shift, affecting a large part of society (e.g., the Internet). Megatrends have long lifespans and a lasting influence.
- *Futurology*, a research field attempting to predict future developments in society based on past and present trends (Bell, 2003), marks the long-term end of the trend spectrum.

Within this spectrum, the current research focuses on the trend class. However, we should note that trend classes can be related, as fads and trends may be manifestations of a megatrend. A recent embodiment of such a relation is the Nostalgia megatrend, manifested by trends such as listening to music on the move using large “old school” headphones; in the rush for vintage clothes; in a slew of new movie adaptations of childhood classics such as Alice in Wonderland or Where the Wild Things Are; and, closer to our domain, in retro-inspired web design (e.g., Figure 2).

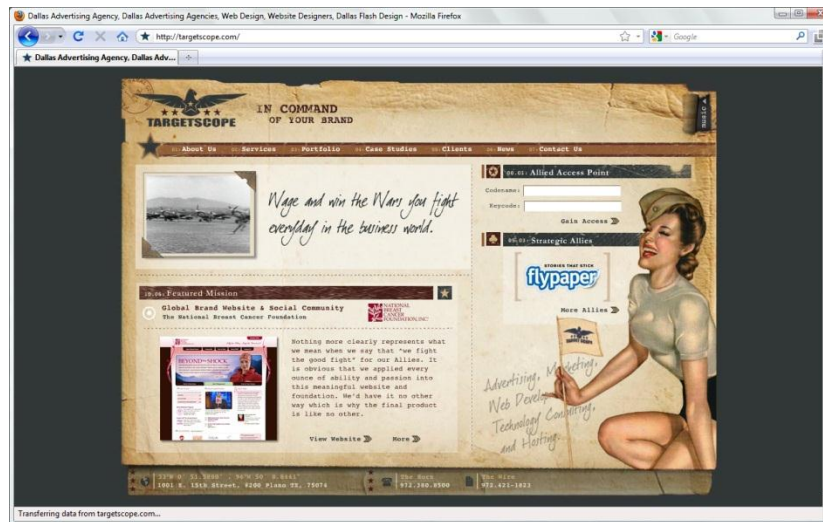


Figure 2: Retro/Vintage in Web Page (Targetscape.com, 2010)

Vejlgaard (2008) suggests that emerging trends share the following common patterns:

- They *evolve over time*, and within that time frame they can be observed and forecasted.
- They are *initiated by trend creators*, a tiny group of people who invent new ideas, products or styles, and are *first adopted by trendsetters*, a somewhat larger group characterized by extreme openness to change and innovations in style and taste. Gladwell (1997) observed professional trend spotters (cool hunters) at work, and deduced that “you have to be one [cool], to know one [cool]” (p. 87). The term “lead users” (von Hippel, 1986; Urban and von Hippel, 1988) is used in various high-tech domains to describe users who have product needs much earlier than the rest of the marketplace, and are likely to significantly benefit from acquiring solutions to those needs. Both lead users and trendsetters have early premonitions towards the emergence of new products or trends. However, there are some significant differences between these group types; among them is that trendsetting appears to be a personality trait whereas lead users’ behavior seems to be rooted in a specific need for a specific product. Moreover, the benefits that lead users wish to reap from obtaining solutions to their early product needs (economic, for example) seem worldlier than the rewards that trendsetters receive for adopting an innovation early (prestige, for example). Regardless, trends are identifiable only by connoisseurs. Therefore, by observing Trendsetters one can possibly identify new trends. The more Trendsetters adopt a product and the more different types of trendsetters adopt a product, the more it is likely to become a trend.
- Trends usually *emerge in major cities*, such as New York, Tokyo, London, etc., which have a large concentration of Trendsetters and a strong appeal for Trendsetter visitors. Therefore, it is not surprising that the Silicon Valley, with its large concentration of technological Trendsetters, and close proximity to the major trendsetting cities of Los Angeles and San Francisco, is the birth-place for many technological trends.

- New trends are often a *reaction to what has become mainstream* or has been in the market for many years. Trendsetters will usually abandon a style when it becomes too mainstream.
- Trends often *oscillate from one end of a style axis to the other*. These changes can be observed in various fields, such as architecture and clothing fashion. In web design, for example, the visual complexity, in terms of detail, color, and layout, of the Ornamental style (a current trend, Figure 3, left) can be contrasted with the visual simplicity of Web 2.0 Design style (an older, past-peak trend, Figure 3, right).

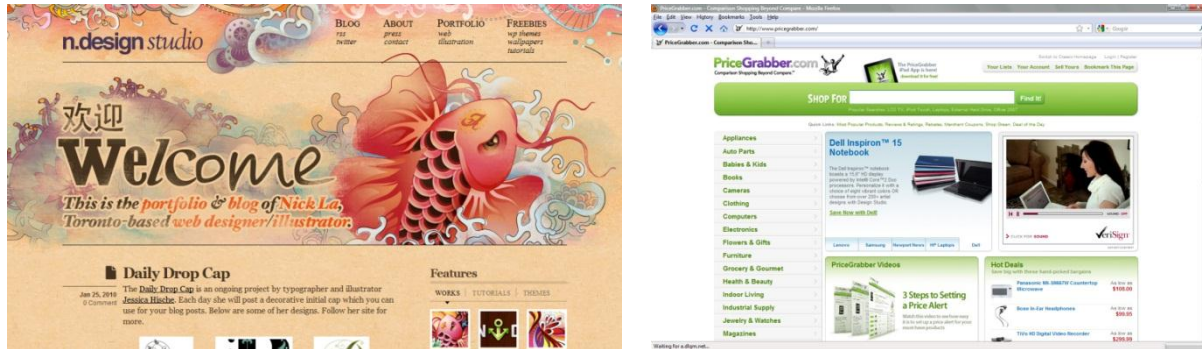


Figure 3: Trend Oscillation: Ornamental Complexity in Web Page (Ndesign-studio.com, 2010), left; Web 2.0 Design Simplicity in Web Page (Pricegrabber.com, 2010), right

- Trends often appear at the same time in multiple industries (Gladwell, 2000). For example, the glossy trend is concurrently observed in shoes, smartphones, and web pages (Figure 4) and the clean and minimal trend in shoes, music players, and web pages (Figure 5).



Figure 4: Trends Appearing Simultaneously in Different Industries: Glossy Trend in Shoes (Melissaplasticdreams.com, 2009), top; Smart Phones (Apple.com, 2009), middle; and Web Pages (Apps.selcukyilmaz.com, 2010), bottom



Figure 5: Trends Appearing Simultaneously in Different Industries: Clean and Minimal Trend in Shoes (Unitednude.com, 2009), top; Music Players (Store.apple.com, 2009), middle; and Web Pages (Google.com, 2009), bottom

The product or style can be easily copied, imitated, and manipulated. Mimetic behavior, i.e., imitation through observing and copying, is largely responsible for spreading a new style until it reaches mass adoption stage and becomes fashion (Lynch and Strauss, 2007). Obviously, some memes are better replicators than others, and therefore spread more widely in the population and last longer (Dawkins, 2006). Information technology is a particularly suitable vehicle for mimetic behavior (Postrel, 2002; Carr, 2003; Tractinsky, 2004). Thus, even relatively complex and rich web designs can be easily imitated (e.g., the Messy Desk trend in Figure 6).

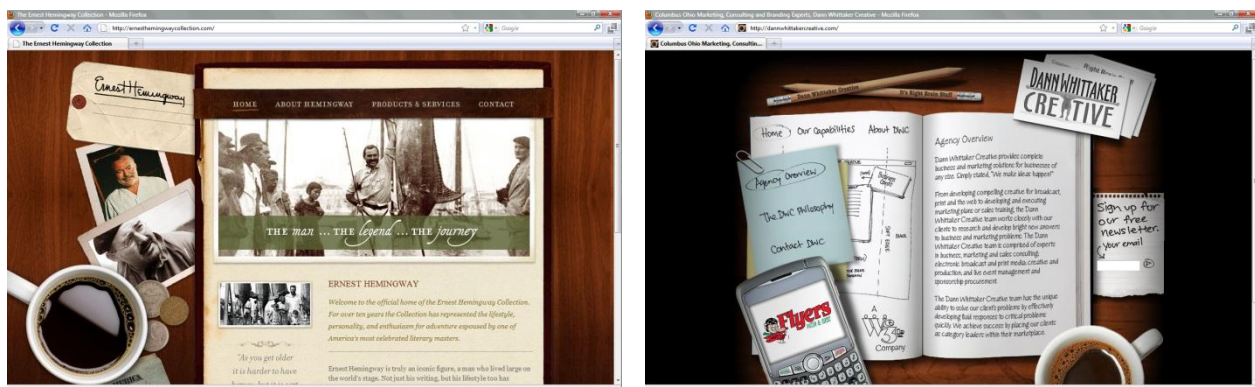


Figure 6: Messy Desks Imitated in Webpage Design (Ernesthemingwaycollection.com, 2010), left; and (Dannwhittakercreative.com, 2010), right

Trend researchers suggest that the pace of trend changes has been accelerating for some time, mostly in the last century (Vejlgaard, 2008). This acceleration is likely a corollary of a rise in individualism and the quest for self-expression as well as of globalization and the proliferation of information which shortened the distance and time of a trend spread phase. A trend that once could take years to reach from the cultural centers of the world to its remote corners can now be globally observed within days through the media. Complementing the acceleration in the pace of the introduction of new trends is a pattern of temporal compression – shortening of the duration of trends. In fact, in recent decades this compression has culminated in the simultaneous co-existence of several different trends, such as artistic styles (Vejlgaard, 2008).

Summary

The terms fashion and trend originated in different times and were studied, for the most part, by different communities, yet they have much in common. Both terms describe processes of change, in which novel ideas, representing the spirit of the times (*Zeitgeist*), emerge, become adopted and spread through the population. Both fashion and trend are representations of a major socio-cultural phenomenon that has a strong economic impact, which has undergone major acceleration and compression during the past century.

Nevertheless, we would like to offer the following distinction between the terms: A trend represents the broader inclination, the larger movement and lasts for a considerable (but varied) duration from incubation to fading out. Fashion, on the other hand, can be seen as a temporary manifestation of a trend, a detailed incarnation of the trend's core message, what is fashionable at present. In light of this distinction, it would have been slightly more accurate to refer to web design styles and approaches as "fashion" rather than as "trend." However, "web design trend" is the de facto term used in the online and academic sources we reviewed for this research. Therefore, when discussing the general phenomena we shall use both terms, fashion and trend, as described above. We will confine ourselves to the specific term "web design trend" when focusing on the web design field.

Models of Adoption and Diffusion

A cardinal issue in understanding the life cycle of trends is the question of how certain fashions/trends catch on in society and why others fail to spread. The process of diffusion and adoption has a relatively long history in the social sciences. Models that attempt to describe, explain, and forecast the diffusion of products and ideas and their adoption by members of society have been proposed in various disciplines such as fashion, communication and marketing as well as in more popular accounts (Gladwell, 2000; Vejlgard, 2008).

The study of how fashion and trends propagate has origins traceable to the beginning of the 20th century. One of the early theories suggests the trickle-down effect (Simmel, 1904). Simmel argued that a fashion is made for, and first adopted by, the elite, and then the lesser in status begin to emulate it until it becomes too common and the elite abandon it in favour of a new fashion. An alternative model was presented later (Blumer, 1969), suggesting a trickle-across process (Lynch and Strauss, 2007), which emphasizes a process of collective selection from competing models or ideas. The items that are selected in the process and become widely adopted in society are those that best represent the spirit of the time. Fashion is said to develop among the broad social sphere as a convergence of collective taste, and the elite are merely early responders to it. The trickle-across theory then sees the elite's role in the fashion process as messengers or mimetic agents rather than initiators.

The perspective of fashion as a continuous process of selection out of competing models preceded the later construct of meme, defined as "a unit of cultural transmission, or unit of imitation" (Dawkins, 2006, p. 192). Memes (such as tunes, ideas, catch-phrases, clothing fashion, etc.) propagate through imitation and serve as the building block of a social evolutionary process akin to that of genes in a biological evolution. Thus, mimetic behavior is largely responsible for spreading a new style until it reaches the mass adoption stage and becomes fashion (Lynch and Strauss, 2007). The intellectual process by which theories of fashion have shifted gradually from Simmel's idea of a top-down social process to more egalitarian models is underscored by the recent Bubble-Up process (Suzuki and Best, 2003), which suggests that sub-culture groups introduce new fashions and ideas into the mainstream in a bottom-up manner.

Theories of the process of diffusion in the social context suggest the existence of major adopter groups within the general population since "the individuals in a social system do not all adopt an innovation at the same time. Rather, they adopt in an over-time sequence" (Rogers, 2003, p. 267). An innovation is adopted only consecutively, by one group after the other and in a very specific order (Rogers, 2003; Gladwell, 2000; Vejlgard, 2008). These groups are known as "adopter categories" in the innovation diffusion literature (Rogers, 2003) or "trend groups" in the trend diffusion literature (Vejlgard, 2008), and their members are characterized by different attitudes towards innovation (Rogers, 2003).

Marketing research has adopted the major behavioral assumptions of Rogers's diffusion theory in attempt to explain and predict the timing of initial purchase of new consumer products by individuals and the overall growth rates of product sales (Bass, 1969). Like the preceding theories, the marketing literature views market penetration of new products and services (i.e., innovation diffusion) as driven by social influences (Peres, Muller and Mahajan, 2010). While agreeing on the sequential nature of the adoption process, adoption models differ in terms of their granularity. Thus, for example, Rogers' classical model posits the existence of five adopter groups (Rogers, 2003): innovators, early adopters, early majority, late majority, and laggards. Other models use finer (e.g., Vejlgard, 2008) or coarser (e.g., Van den Bulte and Joshi, 2007) classification among adopter groups.

Finally, there seems to be agreement among the various theoretical perspectives regarding the key role of trendsetters in the diffusion process and about the egalitarian and heterogeneous nature of the process. Thus,

"trends emerge from all strata of society" (Vejlgaard, 2008, p. 160) and trendsetters in one sphere are not necessarily the same as in other spheres (Van den Bulte and Joshi, 2007). Hence, people who may serve as trendsetters in the diffusion of innovations in certain aspects of information technology (e.g., programming environments) may not be influential at all in the diffusion of innovations in other aspects (e.g., visual design), and vice versa.

Fashion and Trends in Web Design

Our underlying motivation was to begin a systematic study of fashion and trends in HCI. Because the scope of such a study is very broad, we focused this research effort on the field of web design trends. Few previous studies have looked into fashion and trends of web sites. Ryan, Field and Olfman (2003) studied the evolution of state government web home pages from 1997 to 2002. They identified three design dimensions: page layout, navigation support and information density. Six types of web home page designs were categorized: Long List of Text Links, Simple Rectangle, Short L, High Density/Long L, Boxes, and Portal.

In a subsequent research project, Ryan, Field and Olfman (2006) looked into reasons for design changes in university web sites (as stated by the respondents). They found that the main reasons were rational (increasing efficiency), marketing (freshening brand image), political (reflecting a new regime), and institutional (improving fit with peer websites), in that order of importance. They also acknowledge the potential role that fashion may play in this process, explaining that "...a Web site developed at one time, and perhaps in fashion then, would come to be viewed as out of style after some time. An 'old' looking Web site could reflect lack of anything new to say or lack of awareness of how sites are currently constructed. Either way, these are not judgments that most organizations would want their potential Web site visitors to form" (p. 53).

Some studies examined the web design characteristics of the early Web (approx. 1990-2000). In a series of studies, Engholm (2001, 2002, 2007) investigated the graphic design development of the Internet, from a design research perspective, and categorized some of the prominent web design visual trends of that era, such as the Functional styles (HTML Design, Hyper Functionalism, Swiss Style, etc.) and the Avant-garde styles (Trash, Lo-Fi Grunge, Kilobyte Minimalism, etc.). Lialina (2005, 2007, 2010) studied the early web from an artistic-ethnographic perspective, while collecting and classifying the prominent visual (and acoustic) style elements of that era, such as Under Construction graphics, Starry Night backgrounds, GIFs and more.

Overall, it appears that previous studies provide cursory indications of the existence of trends in web design. However, these studies have concentrated on early web design, on restricted domains, or on specific perspectives. Thus, the major developments of the last decade remained unexplored, and systematic evidence for the existence and nature of such trends is still wanting.

Research Objectives and Program

Our main goal—providing evidence for the existence of web design trends—was subdivided into three specific objectives. The first objective was to identify website design trends. The second objective was to find evidence for the timeline in which these trends appeared and how current (up-to-date) they are. The third objective was to empirically test hypotheses that can be derived from the premise that web design trends exist. To achieve these goals, we conducted the following research program, which is described in the following sections of the paper.

Part 1: Developing a web design trend library

The aim of this part of the research was to systematically document and map web design trends. Based on online archival data, we have built a library of web design trends. For each trend, the library includes visual examples, characteristics and attributes such as names, dates, references, typical elements, correspondence to technological advances, etc. The web design trend library served three purposes: 1) it provided evidence for the existence of trends in web design, 2) it was used to generate stimuli for the next two parts of the study, and 3) it provided information we can share with the HCI research community and with industry practitioners to help lay the ground for future documentation and research on Web design trends.

Following the initial development of the trend library we conducted a two-round Delphi study, targeting an international group of web design trend experts as participants. The purpose of the Delphi study was to further corroborate the trend library, to check it for completeness, and to enrich our understanding of the trends' contexts and characteristics.

Part 2: Predicting and testing trend-related behavior

The purpose of this part of the research was to establish that web design trends indeed behave in a manner that resembles other trend and fashion-like phenomena. For this purpose we constructed hypotheses that stem from the

premise that there are web design trends. We tested these hypotheses by measuring attitudes toward designs of two user groups which we classified a priori as Trendsetters and Followers.

DEVELOPING THE WEB DESIGN TREND LIBRARY

In this part of the research we looked for archival evidence to support our claim that, given the premise that website designs behave in a trend-like fashion, some conditions should be met. These conditions include finding that some website designs are very similar to each other but very distinct from other designs, and that the trends could be distinguished in terms of their lifecycle, e.g., the date of their emergence, and indications about falling out of favor and being replaced by other designs. For this purpose we collected online archival data as described in the next subsection.

Method

The web design trends were collected by searching the Internet for reviews in online design magazines and blogs as well as reviewing the scarce academic literature on this topic. Academic literature was available mainly for Faded web design trends, i.e., trends that have been discontinued (Engholm 2001, 2002, 2007, Lialina 2005, 2007, 2010). Over 1,000 web site designs were examined in the course of assembling the library. Decisions about whether a web design trend exists and about the properties of that trend were reached by consensus by two of the authors. We used three criteria as preliminary evidence for deciding whether a web design trend exists:

- The first criterion was met once we had sufficient evidence from multiple online sources, such as web design trend reviews, that the trend exists. By “sufficient evidence” we mean that at least two online sources (e.g., design sites and blogs) pointed to the existence of the trend.
- The second criterion was trend coherence. Although the decision of whether the trend met this criterion was made subjectively (by the two judges), conceptually this criterion can be compared to the idea of construct validation, namely, determining that there is evidence for both convergence and discriminability. This was achieved by finding at least four websites with very similar designs representing a trend distinguishable from other trends.
- The third criterion was that in addition to typical web design samples for each trend, described above, other websites could be found that adhered to the principles of the trend. At the very minimum we required that at least four additional websites exhibited the trend, although in most cases we found more than four such websites. In other words, four websites were used to define the trend and another four websites were used to demonstrate its prevalence.

The range of dates that encompassed the trend's life cycle (i.e., between its emergence and decline) were estimated using three sources: 1) The date range of the online web design trend reviews where it was found. The date range was lower-bound by the chronologically first online web design trend review citing the trend, and upper-bound by the chronologically last online web design trend review citing it. 2) Using the Internet Archive's Wayback Machine (<http://www.archive.org>), we recorded the dates in which the design first appeared in each of the four typical websites and the dates in which it was replaced by another design in each of the four illustrative websites. 3) We searched for the trend's name online (using the “Google Insights for Search” online search tool at <http://www.google.com/insights/search>), constrained to include the Internet/Web Design and Development category.

For example, the trend “Web 2.0 Design” appeared in web design trend reviews from 2005 to 2009 (Source 1), its adoption dates by the selected typical websites ranged from 2006 to 2009 (Source 2), and the search results from “Google Insights for Search” yielded a date range from 2005 to 2010 (Source 3). Since the search results obtained from source 3 (Figure 7) show a steady decline in the interest in this trend since 2007 and sources 1 and 2 report date ranges ending by 2009, we confined this trend's life cycle to the years 2005-2009.

Based on the date ranges resulting from the dating procedure described above, we performed an initial classification of trend life-cycle stages. Web design trends that had been discontinued, i.e., their date range was utterly in the past, were classified as Faded. Web design trends were classified as Past-Peak if they were still visible but showed indications of being on the decline; That is, their upper-bound was current but their lower-bound was a few years past and they were not mentioned in current reviews, or were often called “overused” in recent years' web design trend reviews. For example, the “Web 2.0 Design” trend, dated 2005-2009 was classified as Past-Peak. Web design trends with date ranges extending to the present and mentioned in recent years' web design trend reviews³ were classified as Current.



Figure 7: Interest Over Time in “Web 2.0 Design”, Obtained from “Google Insights for Search” and Limited to “Internet/Web Design and Development” Category

Validating the Library

To validate the web design trend library’s collection, we conducted a 2-round Delphi study, in which we collected and distilled expert judgments about the trends. The literature recommends varied sample sizes for Delphi studies, from 4 to 1685 participants (Akins et al., 2005; Skulmoski et al., 2007). Our target sample was a list of 60 international web design trend experts, who had authored one or more online publications about web design trends. Twenty-two (37%) of these experts participated in the first round of this study, and 11 of these continued to the second round.

In the first round, the participants reviewed 25 web design trends, taken from the current trends section of our library, rated their up-to-dateness on a 1-10 scale, and commented about them. This round yielded an initial up-to-dateness ranking (mean 6.10, min 3.55, max 8.14) of these 25 current web design trends. We then re-classified five trends that were initially classified as Current, but received an up-to-dateness rating of less than 5 as Past-Peak trends, leaving 20 trends under the Current category. Finally, we added an expert comment summary to each current web design trend in the library, revealing cross-trend relations, design influences, etc.

In the second round, the participants reviewed the 20 Current web design trends and the mean rating of each trend obtained in the first round with the option to revise their previous up-to-dateness rating. This round yielded a final up-to-dateness rating for each of the 20 current web design trends obtained in Rounds 1 (N = 22) and 2 (N = 11). The correlation between the 20 up-to-dateness ratings from the two rounds (averaged over all participants) was 0.96.

In addition to giving ratings, the experts were asked to comment about the comprehensiveness of our library and to suggest additional trends that did not appear in the study. The experts, on the whole, viewed the current web design trends presented to them as a comprehensive representation of up-to-date trends. They commented, for example, that the study had “good coverage and questions about web design trends” and that it “did a great job in summarizing the most notable trends.” The trends that were reported as missing were of a non-visual or dynamic nature such as video, animation without flash, and mobile layouts, which were outside the scope of this study.

Overall, the Delphi study provided further support for the idea of web design trends. First, the web design trend experts were supportive of the notion of trends in web design. Second, they often referred to related or counter trends. Third, the relative agreement within the group regarding the trends’ up-to-dateness rating supports the idea that these are, in fact, visual styles that change over time, which is congruent with the definition of a trend and follows from our premise about the existence of trends in web design.

Library Content and Structure

Following the processes described above, we identified 42 web design trends that met the three required criteria mentioned above. The trends were then classified into the three different life-cycle categories based on their timeline. Overall, 10 web design trends were classified as Faded, 12 web design trends as Past-Peak and 20 as Current web design trends. The web design trend library and related information can be accessed online at: <http://hci.ise.bgu.ac.il/trends>.

The Web Design Trends Library includes the following information for each identified web design trend:

- Sample web pages - screenshots of web pages that have used this trend, taken from four different websites.
- Date Range - estimation of the trend’s date range.
- Trend Group - a thematic category for the trend style.
- Tech Drive - new technologies that supported the emergence of the trend.

- References - quotes, dates and links to online sources, mainly web design trend reviews.
- Elements - characteristic visual elements of the web design trend.
- Expert views - summary of web design experts' comments obtained by the Delphi study.
- Search Trendline - a graph depicting the volume of online searches for the trend's keywords, limited to the Internet/Web Design and Development searches (obtained using the "Google Insights for Search" online search tool at <http://www.google.com/insights/search>).

Thus, the library's content and the information associated with each trend provide initial evidence for the existence of trends in website design in two respects. First, trends are manifested in the apparent coherent design style of difference websites, which are at the same time distinct from other design trends. Second, trends can be categorized into different trend life-cycle stages, a characteristic that satisfies one of the major definitions of trends and fashion.

TESTING PREDICTIONS ABOUT WEB DESIGN TRENDS

Whereas the first part of the research used mainly archival data to test our premise in a retrodictive (or postdictive) manner (i.e., prediction about the past), in this part we use a predictive form of deductive reasoning. Thus, we offer a set of predictions (hypotheses) that stem from our premise that website designs behave in a trend-like manner. We focus here on differences in web design trend perception between people from different groups—designers and non-designers.

We expect designers to be more familiar with the visual design aspects of web pages than non-designers. We also expect designers to exhibit more trendsetting tendencies than non-designers. Trendsetter personality is generally very curious, unafraid to stand out from the masses (with a strong sense of individualism) and explore new things, typically possessing a strong visual sense and actively seeking change (Suzuki and Best, 2003; Vejlgard, 2008). Because of their educational background and their trendsetting tendencies, we expect designers to be more familiar with web design trends, and especially with the most up-to-date trends. This would help them distinguish between current and non-current trends.

Non-designers, however, are expected to be less well-trained and less inclined to follow visual trends, and less likely to keep close tabs on new web design trends. We hypothesize, therefore, that non-designers are less likely to accurately recognize whether a trend is up-to-date, and that they are especially susceptible to underestimating the degree to which non-current trends (i.e., past-peak and faded) are outdated.

- H1: Designers will be more accurate than non-designers in identifying the true life-cycle stage of web design trends.

In addition, and in line with the idea that trends and fashion propagate based on their desirability and decline when they fall out of favor, we also predict a positive association between perceptions of trends' currency and how much they are liked.

- H2. Perception of the up-to-dateness of web design trends will be positively associated with liking of those trends.

It is important to note, that while the hypotheses above may appear intuitive and perhaps ordinary, they have two important objectives. Firstly, even intuitive hypotheses need to be tested empirically for support. Even more importantly, these hypotheses are derived from a falsifiable theory (our major premise) that would be rejected if web design trends did not exist. In other words, if there are no web design trends then there would be no support for these hypotheses, since the assumed "trends" would turn out to be just random fluctuations of web site design, equally undetectable by designers or non-designers.

Method

Sample

We solicited participation from two target groups. One group included potential trendsetters; the other group included potential followers. The former group consisted of subscribers to a mailing list of an Arts and Design school (students, alumni, and lecturers). The latter group included 3rd-year Information Systems Engineering students, who had extensive background in information technology development, including development for the web. The Engineering students received class credit for their participation in the study. The design mailing list participants did not receive any compensation.

Based on their background (education, academic affiliation, and occupation) we classified the participants into two groups: designers and non-designers. Out of the 274 participants, 110 were classified as non-designers, 152 were classified as designers. Twelve participants were excluded from the analysis because they could not be classified due to missing data. Thus, the analysis covers data from 262 participants (137 males and 125 females, age range from 20 to 66 years, average age of 28.63 years ($SD = 7.90$)). For a background data comparison of the designer and non-designer groups, see Table 2.

Table 2: Descriptive Statistics of the Designer and Non-Designer Groups

	Designers	Non-Designers
Number of Participants	152	110
Gender	Female 87 (57.2%) Male 65 (42.8%)	Female 38 (34.5%) Male 72 (65.5%)
Age (years)	Mean 29.77 SD 8.55 Range 20 to 66	Mean 27.05 SD 6.61 Range 20 to 64

Stimuli

Twenty-six different web design trends from three trend life-cycle stages were used in this study. Of the 26 web design trends, 10 were Faded, 6 were Past-Peak and 10 were Current. These trends were selected from the web design trend library (described above).⁴ Each web design trend was represented by four instantiations—screenshots of websites—which are typical of that trend. Each one of the four website screenshots used for representing a web design trend was presented within a browser frame, in order to make it clear to participants that these were images of websites (example in Figure 8).

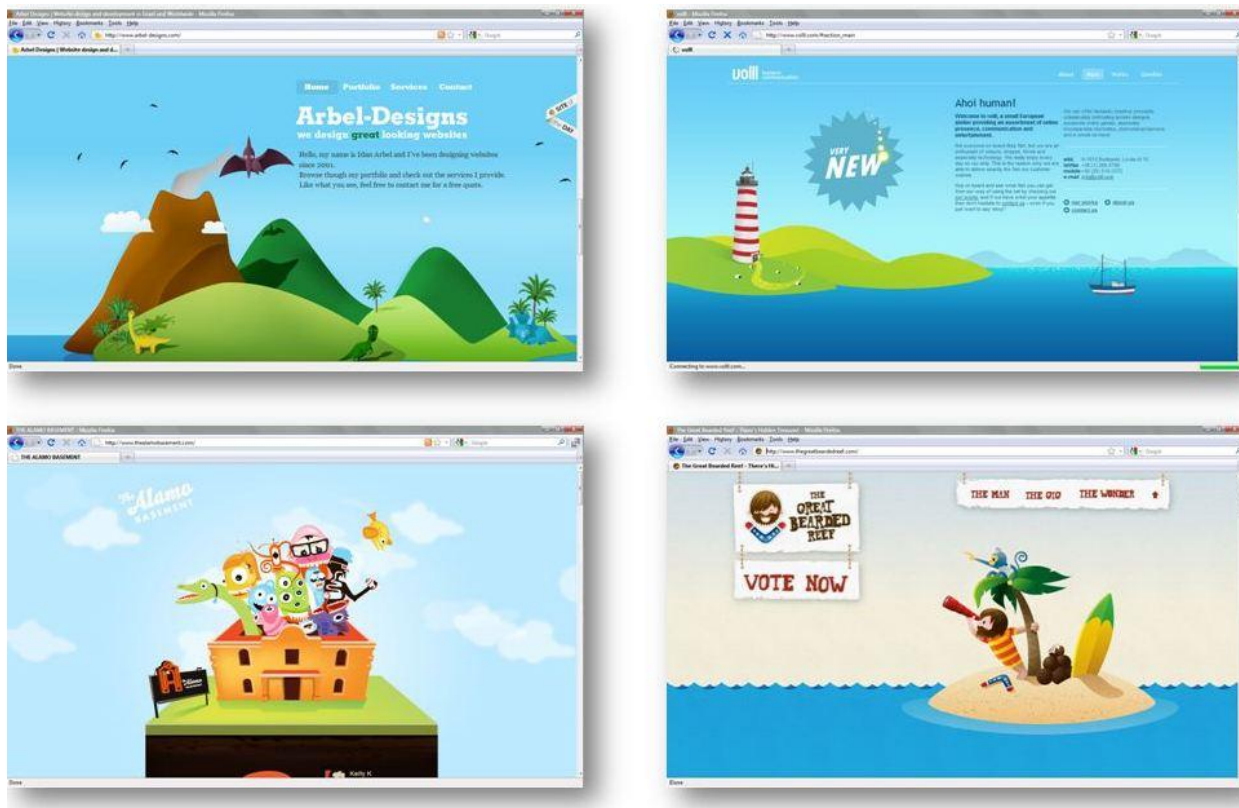


Figure 8: Presentation of Four Typical Website Screenshots of the “Clean Illustrations” Trend

Procedure

The study was performed using an online website. The participants were directed to the site and, following an introduction and general instructions about the study, they provided background information on their gender, age, occupation, field of academic studies, and academic affiliation (if applicable). In the next stage, participants received instructions about the study. Then, they responded to a training example of the experimental task using a trend from the trend library which was not part of the stimulus set.

Next, the 26 web design trends appeared in a random order. Each web design trend was presented as a large image of four instantiations of the trend. On the next page, a smaller version of the same image was presented again, to serve as a reminder for the participants who were now asked to evaluate the trend's up-to-dateness and the degree to which they liked the trend. We used a single item to measure each of these variables. The responses were on a 10-point scale (very not up-to-date to very up-to-date, and very unlikeable to very likeable; see Figure 9).⁵

The screenshot displays a web interface for evaluating design trends. At the top, four small images show different web design trends: a man's face with text overlays, a man holding a card, a woman holding a red object, and a man with text overlays. Below these images are two horizontal scales for evaluation. The first scale is labeled 'עד כמה עדכניים נראים בעיניך האתרים בעמוד זה?' (How up-to-date do the sites in this page look to you?) and the second scale is labeled 'עד כמה מוצאים חן בעיניך האתרים בעמוד זה?' (How much do you like the sites in this page?). Both scales range from 1 to 10, with 1 being 'מאד לא עדכני' (Very not up-to-date) and 10 being 'מאד עדכני' (Very up-to-date). The scales are currently set to 5. At the bottom, there are buttons for 'הבא' (Next) and 'קודם' (Previous).

Figure 9: Screenshot of a Page in the Main Study Stage (“Huge Images” Current Trend)

In the final stage of the study, the participants answered a questionnaire that included three multiple item scales, measuring individual differences in areas related to the study. The scales were translated to Hebrew and were further adapted to the specific context of the study. The first scale was based on the short version of the Trendsetting Questionnaire (TDS-K) (Batinic et al., 2008), to which we added an item about online design sites. The second scale was Domain Specific consumer Innovativeness (DSI), which measures innovativeness in a specific domain of interest. We used a version that was adapted by Goldsmith and Hofacker (1991) to the domain of product fashion. The third scale was based on the Centrality of Visual Product Aesthetics (CVPA) scale, which measures the level of significance that visual aesthetics hold for a particular consumer in his/her relationship with products (Bloch et al., 2003). The participants indicated their level of agreement with each of the statements on a 1 to 7 scale. The scales and items are presented in the Appendix.

In the context of this study, we expect that designers will score higher on the trendsetting scale than non-designers, because designers are considered to exhibit greater trendsetting tendencies in general (e.g., Vejlggaard, 2008) and because the scale was adopted (in this study) to the design domain. We also expect designers to have higher CVPA scores, based on the higher standard of visual aesthetics required in the design profession. Finally, we expect designers to score higher on the domain specific innovativeness scale because of its concentration on fashion—a domain that appears to be more relevant to designers than to non-designers.

Results

Background Variables

Cronbach's α (reliabilities) of the background scales ranged from 0.91 to 0.94 and the correlations between the mean scores on the scales ranged from 0.58 to 0.74 (Table 3).

Table 3: Descriptive Statistics, Reliabilities (on the Diagonal) and Correlations Between the Background Variables

Scale	# of Items	Mean (SD)	TDS-K	DSI	CVPA
Trendsetting (TDS-K)	10	4.19 (1.55)	0.94	0.58	0.74
Domain Specific Innovativeness (DSI)	5	2.80 (1.49)		0.91	0.58
Centrality of Visual Product Aesthetics (CVPA)	11	5.10 (1.40)			0.94

Note: Scores of all variables are on a 1(low) to7 (high) scale.

Recall that participants were classified as designers or non-designers based on their self reports of their education and profession. The expectation that designers would tend to score higher on each of these scales was checked against the background variables. Independent samples t-tests revealed that those classified as designers scored significantly higher on the Trendsetting scale, $t(240.90) = 7.99, p < .001$, and on the CVPA scale, $t(260) = 6.77, p < .001$ (equal variances assumed). However, there was no difference between the groups in terms of the DSI score, $t(218.891) = 0.26$. These results are further discussed in the Discussion section.

Hypothesis Testing

This study's hypotheses pertain to perceptions of and attitudes towards current and non-current web design trends. Current web design trends are those classified as Current, while non-current web design trends are those classified as Past-Peak or Faded. To test the hypotheses, we conducted a mixed-design analysis of variance (ANOVA) with trend life-cycle stage (Faded, Past-Peak, and Current) as a within-subjects factor, and group (Designers vs. Non-Designers) as a between-groups factor, for the two dependent variables (up-to-dateness and liking). The up-to-dateness and liking scores for each trend life-cycle stage were calculated by averaging the participants' scores on the trends that belonged to that stage.

Perceived Up-to-Dateness Scores

Figure 10 depicts the average up-to-dateness scores provided by the two groups for the three trend stages. A two-way mixed analysis of variance revealed statistically significant main effects of trend life-cycle factor, $F(2, 520) = 1014.54, p < .001$, Partial $\eta^2 = 0.8$) and group, $F(1, 260) = 9.80, p < .002$, Partial $\eta^2 = 0.04$, which were qualified by a significant interaction effect, $F(2, 520) = 60.51, p < .001$, Partial $\eta^2 = 0.19$. Post-hoc comparisons with Bonferroni adjustments for between-groups (Designers vs. Non-Designers) differences in perceived up-to-dateness scores at each life-cycle stage (Faded, Past-Peak, and Current) were significant at the .001 level. Thus, relative to non-designers, designers perceived Current trends as more up-to-date. In contrast, non-designers considered Past-Peak and Faded trends as more up-to-date, relative to designers. These results support hypothesis H1.

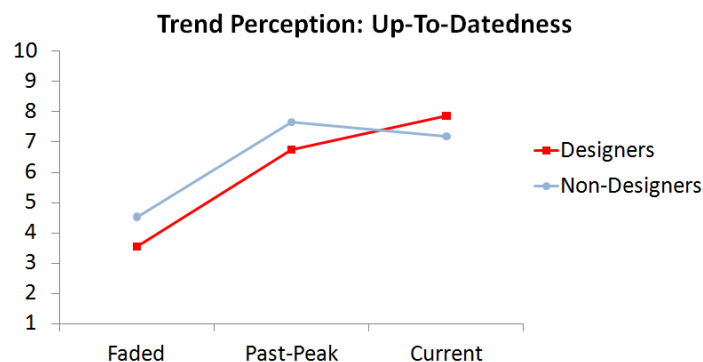


Figure 10: Trend Up-to-Dateness Perception by Designers and Non-Designers in the Trend Life-Cycle Stages (Faded, Past-Peak, Current)

Trend Liking Scores

The pattern of the average liking scores provided by the two groups was very similar to that of the up-to-dateness scores described above. Figure 11 depicts the average liking scores of the two groups for the three trend stages. Statistically significant main effects of the trend life-cycle factor, $F(2, 520) = 1086.60, p < .001$, Partial $\eta^2 = 0.81$, and

of group, $F(1, 260) = 17.06$, $p < .001$, Partial $\eta^2 = 0.06$, were moderated by a significant interaction effect, $F(2, 520) = 72.57$, $p < .001$, Partial $\eta^2 = 0.22$. Bonferroni-adjusted post-hoc comparisons revealed significant differences ($p < .001$) between the designers and non-designers groups at each life-cycle stage (Faded, Past-Peak, and Current). Designers liked Current trends more than non-designers. Conversely, Past-Peak and Faded trends were liked more by non-designers relative to designers. These results support hypothesis H2.

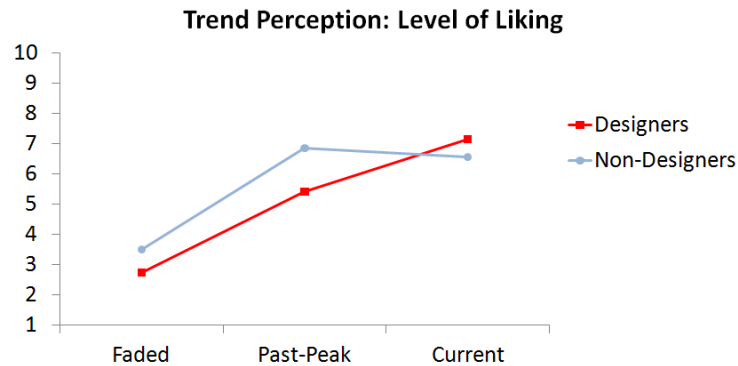


Figure 11: Trend Liking by Designers and Non-Designers in the Trend Life-Cycle Stages (Faded, Past-Peak, Current)

Effects of Background Variables

To test whether the background variables influenced the participants' responses above and beyond their classification as designers or non-designers, we conducted regression analyses with up-to-dateness and trend liking as dependent variables. The independent variables included the three background variables, Trendsetting (TDS-K), Domain Specific Innovativeness (DSI) and Centrality of Visual Product Aesthetics (CVPA). Group was included as a dummy variable (designers = 1, non-designers = 0). We conducted the analyses separately for each trend life-cycle stage, since it was apparent from the previous analyses that the participants' orientation interacted with their evaluations of the trend life-cycle stage. Table 4 displays significant path coefficients for the two dependent variables.

Table 4: Standardized Regression Coefficients, t-values and Significance Levels for Perceived Up-to-Dateness and Liking of Three Trend Life-Cycle Stages

Trend Stage DVs	DV = Perceived Up-to-Dateness			DV = Liking		
	B	t	Sig.	B	t	Sig.
Current			$R^2 = 0.12$			$R^2 = 0.11$
CVPA	0.27	2.92	0.004	0.22	2.33	0.021
Design Orientation	0.21	3.02	0.030	0.15	2.14	0.033
Past-Peak			$R^2 = 0.15$			$R^2 = 0.23$
DSI	0.16	1.97	0.050	0.20	2.65	0.009
Design Orientation	-0.32	-4.59	0.000	-0.43	-6.57	0.000
Faded			$R^2 = 0.16$			$R^2 = 0.14$
TDSK	-0.35	-3.71	0.000	-0.27	-2.81	0.005
Design Orientation	-0.23	-3.38	0.001	-0.18	-2.62	0.009

Note: only significant IVs are displayed.

In general, the regression results for the up-to-dateness evaluations and for the level of liking were very similar. The regression coefficient of Design Orientation was statistically significant for all trend stages. As expected following the ANOVA results, the coefficient was positive for Current trends, meaning that designers (relative to non-designers) perceived the current trends as more up-to-date and more likeable. The coefficient was negative for the Faded and Past-Peak trends, indicating that trends at these stages were perceived as more up-to date and were perceived as more likeable by non-designers.

Different background variables contributed to perceptions and likings of trends in the three life-cycle stages. For the group of Current trends, Centrality of Visual Product Aesthetics was positively related to up-to-dateness perceptions and liking. Domain Specific Innovativeness was positively associated with liking of Past-Peak trends and marginally

associated with perceiving them as up-to-date. Finally, Faded trends were perceived as more up-to-date and were more liked by participants with low trendsetting scores.

Relationships between Perceived Up-To-Dateness and Liking

Over all 26 trends, the correlation between the perceived up-to-dateness of a trend and how much it was liked was high at 0.77 ($p < .001$), as hypothesized in H2. However, if we break the trends into three different life-cycle stages—Current, Past-Peak, and Faded—an interesting pattern of correlations emerges (Table 5). High correlations (above 0.7) were found between up-to-dateness and level of liking within each trend stage (bold in Table 5). Considerably weaker correlations were found between up-to-dateness and level of liking of different trend stages. Stronger correlations were observed between the two types of non-current trends—Past-Peak and Faded (italics in Table 5)—than between the Current trends and the non-current trends, possibly indicating a qualitative difference between the most up-to-date trends and the rest of the trends.

Table 5: Pearson Correlations of Perceived Up-to-Dateness and Level of Liking

		Current Trends		Past Peak Trends		Faded Trends	
		Up-to-dateness	Liking	Up-to-dateness	Liking	Up-to-dateness	Liking
Current Trends	Up-to-dateness	-	0.74**	0.39**	0.17*	0.22**	0.11
	Liking		-	0.36**	0.39**	0.26**	0.28**
Past Peak Trends	Up-to-dateness			-	0.77**	<i>0.53**</i>	<i>0.42**</i>
	Liking				-	<i>0.48**</i>	<i>0.49**</i>
Faded Trends	Up-to-dateness					-	0.78**
	Liking						-

Notes: N=262. ** $p < .001$; * $p < .01$

DISCUSSION

This research project gathered evidence for the existence of website design trends. The first challenge in our attempt to uncover trends in website design was to clarify the illusive concepts of “trend” and “fashion.” There are no clear scholarly definitions for these concepts, but this is not uncommon for various social or socio-technical concepts, even those that have been studied scientifically for a much longer time (e.g., group, socio-economic status, and usability). Hopefully we have contributed to a common understanding of these concepts by identifying their salient characteristics and suggesting how they relate to each other. We suggest that this clarification and the criteria we used to demonstrate the existence of trends can serve as a reasonable common ground for future research. These criteria include 1) that the concept can be operationalized by finding exemplars (instantiations), 2) that experts agree about the degree to which the exemplars conform to the concept, and 3) that predictions about behaviors related to operational levels of the concept can be stated and tested.

We created a web design trend library that offers two main contributions. First, it is an initial attempt to methodically expose and categorize trends in the web design domain. This effort yielded systematic documentation of web design trends, including characteristics, date ranges, and archetypal samples, which may be of use in further studying this new development (in terms of design and technological history). In addition, it provided initial support to the premise that trends in web design exist. Second, the library creation offers some methodological contributions and ideas for further studies of trends, such as the proposed methods for identifying, refining, and classifying web design trends, as well as estimating their date range.

In the second part of the research we measured individual differences in trendsetting, centrality of visual product aesthetics, and fashion innovativeness. The results of two of the scales supported our a priori assumptions that designers would score higher than non-designers on the centrality of product aesthetics and on trendsetting in design. Contrary to our expectations, there were no differences between designers and non-designers in terms of fashion innovativeness. In retrospect, we suspect that this result stems from the general meaning of the term fashion: there are all sorts of fashionable products, ranging from clothing to IT gadgets. A designer may be more innovative with regard to certain product classes or when it comes to the stylistic appearance of products, whereas an information systems engineer may be more innovative when it comes to technological products. Thus, the lack of concrete context in this scale may suggest that, in general, non-designers are not less innovative than designers. These groups may simply express their innovativeness in different domains. It is also possible that the two groups would have scored similarly if the trendsetting scale would have been phrased in general terms, rather than specifically

about design. However, since the gist of the study was people's ability to recognize design styles, we believe that tailoring the TDS-K scale to the design domain was more appropriate than using the general phrasing of the DSI scale.

We then tested hypotheses that stemmed from our main premise. The results support the hypotheses; designers were more accurate than non-designers in detecting the currency of trends. This was especially salient when non-designers mistook past-peak trends to be more up-to-date than current trends. In addition, the results indicate that people have more positive attitudes toward design trends that they perceive as current (regardless of whether this perception is accurate or not). These findings have practical and theoretical implications, which will be discussed below.

Limitations

This exploratory study, probably the first on trends in HCI, has several limitations that should be considered before reaching further conclusions and conducting future research in this area. One of the limitations relates to the type of stimuli used in the second and third studies. While we are confident that these stimuli faithfully represented their respective web design trends, their static nature rendered them somewhat artificial compared to the actual websites, which may include dynamic content and design elements. In addition, we have only used screenshots of the main pages of these websites and not of inner pages; thus, it seems more appropriate to generalize our findings to trends in the design of web home pages rather than to web pages in general.

Another limitation pertains to the difficulty in obtaining adequate representation and categorization for Faded web design trends. Since these trends have already been discontinued and have been replaced by newer design in most websites, we had to rely on imperfect sources in terms of the quality and completeness of the information. Thus, a major source used for this type of trend was the Internet Archive's Wayback Machine (<http://www.archive.org>), which does not provide consistently high quality archiving. For example, many archived samples of various websites were lacking proper formatting or images. Another source of information we used were websites with designs that are "frozen" in time, e.g., due to owner abandonment. While such designs may faithfully represent a trend at a certain point in time, the nature of these abandoned websites makes it difficult to determine when such trends became Faded. Thus, keeping our library up-to-date may serve an important role in future research on web design trends and perhaps in research on trends in general.

A third limitation of this research is that many of the participants from both groups in the third study were university students. Although the IS engineering students were quite well versed in web development because they have taken courses and gained considerable exposure to the web, it could be that more seasoned developers would eventually develop a stronger sense for visual design and would be more proficient in identifying website design trends. This possibility is mitigated by the fact that the designers exhibited a greater tendency to be design trendsetters and scored higher on the centrality of visual aesthetics scale. Still, to corroborate the results of this study future research should attempt to sample more experienced IS and design professionals, as well as participants from other segments of the population.

Implications for Practice and Research

Our research provides empirical evidence for the existence of trends in website design. This is important because trends are social and cultural phenomena. They usually do not emerge out of thin air; rather, they are often manifestations of broader social, political or technological processes (Vejlgaard, 2008). The web design trend library provides evidence that web design is part of such processes and forces. Evidence also suggests that first impressions created by how a website looks influence how people perceive those websites (Lindgaard et al., 2006; Tractinsky et al., 2006; Porat and Tractinsky, in press) and possibly the organizations that they represent (Vilnai-Yavetz and Rafaeli, 2006). Organizations that invest considerable resources in developing and operating websites should not ignore this design aspect. Thus, IT professionals and educators should pay attention to design trends, take them into account, and try to understand and implement them while developing or revising their online presence. Keeping up-to-date on design trends may not be simple given trend acceleration and compression, which seem to accurately describe the state of affairs in web design in particular. During the creation of the web design library, we identified 20 current trends, 12 past-peak trends and 10 faded trends. We believe that this is indicative of acceleration in the web design domain. Thus, it is likely that the rate of appearance and the degree of coexistence of new web design trends will continue to accelerate in the foreseeable future. The implications of this acceleration may be reflected in people's growing expectations for frequent design updates of websites, leading to a growing need for mechanisms that handle these new requirements. Such mechanisms may include the incorporation of design trend experts in development teams and professional services delivering web design trend information to web design agencies and website managers, in the same way that the clothing fashion industry is relying on professional trend forecasts for the creation of its collections.

Who might be those design trend experts? Our findings suggest that designers tend to be design trendsetters and as such, they can more readily recognize developments in the life-cycle stage of design trends, especially in terms of evaluating how up-to-date they are. Designers are better able to distinguish current web design trends from older ones. Non-designers, however, even people with considerable exposure to internet design and development like the IS students who participated in our study, tend to underestimate the degree to which trends are outdated and to prefer web design trends that are less up-to-date. Thus, designers appear better equipped to handle the task of keeping a website's design current. They are probably more likely to be aware of the broader context within which web design trends emerge, peak, and fade. They are more likely than other members in the development team to point at the most appropriate design for a product, given its time to market and target consumers. For example, if the time to market of a redesigned website is short and the target consumers are followers, it might not be advisable to apply the most up-to-date web design trend. If time to market is long, however, current designs may appear outdated soon after they are launched. Thus, it would be the responsibility of the designer to search for emerging trends that have not yet peaked in order to ensure that the website appears up-to-date upon roll out.

The findings of this research can be further extended in numerous ways. One way would be to conduct similar studies in other HCI domains. For example, we can study trends in the design of desktop and smart phone operating systems and applications. Such studies may look at how software and hardware technologies have been instrumental in the emergence and lifecycle of various design trends in interactive systems. An important research avenue would be to examine the mutual effects of information technology and other societal trends. The increasing plasticity of interactive software and hardware provides much more leeway in designing interactive products and removes obstacles that in the past have limited such relationships. Thus, we can examine the extent to which social trends affect the design of IT, and how IT and IT products affect design trends in other domains. Similarly, it would be interesting to investigate how the evolution of IT hardware and software has contributed to the emergence of design trends both as enablers of and as inspiration for new forms of trends.

Finally, we believe that there is a need for research aimed at identifying best practices for integrating HCI trend research into the design process of interactive products. Related to that, we propose that IS and Information schools consider incorporating visual design education in their curricula. As visual design becomes inseparable from interactive products, it is important that information systems professionals gain more understanding about this element of the system. Recently, two of the authors were involved in a three day workshop that introduced principles of visual design to IS students. Admittedly, many students who were offered the opportunity to participate in the workshop declined for various reasons, not the least of which was the perception that this topic is not relevant for their career. Still, those attending (about 20 students) reported being strongly and positively affected by the workshop, indicating that it contributed significantly to their understanding of development facets they never considered before. The intersection of visual design, IT and HCI is where some of the most fascinating interactive products are being developed. We hope that this research will contribute to better understanding and synergy among these disciplines.

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¹ The terms "trendsetters" and "followers" refer to people's tendency to adopt new trends, as discussed later in this paper.

² The LIVESTRONG Bracelet is a yellow bracelet launched in May 2004 as a fund-raising item for the Lance Armstrong Foundation (see http://en.wikipedia.org/wiki/Livestrong_wristband and <http://www.livestrong.org>).

³ Recent web design trend reviews were defined, as a rule of thumb, as reviews from the last three years leading up to the data collection period for this research, i.e. 2008-2010.

⁴ Our initial goal was to select 10 trends from each life-cycle stage. However, at the time of conducting the study we could identify only 6 past-peak trends.

⁵ While multiple item scales are recommended in most situations, we chose to use single item scales for practical reasons (otherwise the questionnaire would be too long and participants would become fatigued and their responses unreliable). The literature suggests that when both the object of inquiry (the trend, in our case) and its attribute (up-to-dateness and likeability) are concrete, then single item measures are as valid as multiple item scales (Gardner et al., 1998; Bergkvist and Rossiter, 2007).

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